

MEMOIRS  
OF  
THE GEOLOGICAL SURVEY OF INDIA.

VOLUME LXIX, PART 1.

THE MINERAL DEPOSITS OF EASTERN SINGHBHUM AND SURROUND-  
ING AREAS. BY J. A. DUNN, D.Sc. (MELB.), D.I.C. (LOND.),  
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Plates 1 to 23.)

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Published by order of the Government of India.

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CALCUTTA: SOLD AT THE CENTRAL BOOK DEPÔT, 8, HASTINGS STREET, AND AT THE  
OFFICE OF THE GEOLOGICAL SURVEY OF INDIA, 27, CHOWRINGHEE ROAD.

DELHI: SOLD AT THE OFFICE OF THE MANAGER OF PUBLICATIONS.

1937.

quartz and the sulphides. Frequently minute veinlets of sulphides have developed along the chlorite cleavages.

*Copper* (native)—Cu. This is one of the rare minerals found near the surface along the copper belt, usually as minute metallic specks in association with cuprite. Its colour and metallic lustre are unmistakable.

Crystalline system : cubic. Colour : copper-red. Hardness : 2.5—3. Specific gravity : 8.8—8.9.

Under the ore-microscope the reflecting power is high. Colour : typical reddish brown. Isotropic.

Etch reactions :—

Positive— $\text{HNO}_3$ , KCN,  $\text{FeCl}_3$ , KOH,  $\text{HgCl}_2$ .

Negative—HCl, sometimes positive.

*Coulsonite*—presumably  $\text{FeO}(\text{FeV})_2\text{O}_3$  in which the percentage of  $\text{V}_2\text{O}_5$ , judging from the proportion of mineral present in the ore, is apparently under 20 per cent; the formulae  $(\text{FeV})\text{O} \cdot \text{Fe}_2\text{O}_3$  and  $(\text{FeV})_2\text{O}_3$  are also equally possible. This mineral is associated with the normal magnetite in south Dhalbhum and Mayurbhanj, and was originally called *vanado-magnetite*,<sup>1</sup> but the possibility that it is related to maghemite, the magnetic ferric oxide, indicates the advisability of introducing a new name. The mineral has been named after my colleague Dr. A. L. Coulson.<sup>2</sup> Coulsonite could only be determined microscopically; it occurs in patches in the magnetite (Plate 23, fig. 2), and contains the usual ilmenite intergrowth and is replaced by hematite. In one specimen almost the whole of the magnetite is of the vanadium-bearing variety. Its properties are largely similar to normal magnetite and to maghemite. It is magnetic. Compared with normal magnetite its power of reflection is slightly higher, about 23. Colour : bluish grey, but with high power and oil-immersion there is, in some specimens, a noticeable but rapid gradation from normal brownish magnetite to the blue-grey of the vanadium-bearing mineral. Its distinction from magnetite rests, microscopically, largely on this property. Isotropic.

Etch reactions :—Negative to all usual reagents. The associated magnetite is definitely etched by concentrated HCl, but coulsonite is not affected.

<sup>1</sup> A. M. Heron, "General report for 1935," *Rec. Geol. Surv. Ind.*, 71, p. 44, (1936).

<sup>2</sup> J. A. Dunn and A. K. Dey, "Vanadium-bearing titaniferous iron-ores in Singhbhum and Mayurbhanj," *Trans. Min. Geol. Inst. Ind.*, XXXI, Pt. 3 (in press).